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THE CHILD'S KNOWLEDGE OF ENGLISH PLURALIZATION RULES.

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THIS PAPER PRESENTS FIRST A SUMMARY OF RESEARCH INVESTIGATING THE EXTENT TO WHICH THE KINDERGARTEN CHILD HAS ABSTRACTED IMPLICIT REGULARITIES IN THE FORMATION OF PLURALS IN ENGLISH. PRODUCTION AND RECOGNITION TASKS WERE USED. THE CHILDREN MADE MORE ERRORS WITH SYLLABLES REQUIRING THE ADDITION OR DELETION OF THE /IZ/ ALLOMORPH THAN WITH SYLLABLES REQUIRING EITHER /S/ OR /Z/. (SEE RELATED DOCUMENT ED 011 653.) A DISCUSSION OF THE IMPLICATIONS OF THESE FINDINGS FOR READING FOLLOWS. THE AUTHOR SUGGESTS THAT (1) READING AND WRITING, ALTHOUGH THEY SHARE SOME COMMON PROCESSES, ARE NOT "THE SAME THING IN REVERSE," (2) THE OMNIPRESENCE OF THE TOTALITY OF LANGUAGE IS PERHAPS NOWHERE AS OBVIOUS AS IN READING, AND (3) READING IS A HIERARCHICAL PROCESS OF ELIMINATION OF UNCERTAINTY. THE READER SHOULD EXAMINE FIRST THE LETTERS RICHEST IN INFORMATION--THOSE CAPABLE OF ELIMINATING THE LARGEST NUMBER OF ALTERNATIVE HYPOTHESES--AND USE THE LOW INFORMATION LETTERS FOR DECIDING AMONG THE REMAINING ALTERNATIVES. CONSONANTS HAVE MORE REGULAR SOUND VALUES THAN VOWELS AND ARE THEREFORE MORE DEPENDABLE CLUES TO READING. (DO)

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This paper presents first a summary of some research Dick Tucker and I have completed under the sponsorship of Project Literacy. Following this, the implications of these findings for reading will be considered. In this research we tried to determine the extent of the child's acquisition of the standard rules of pluralization used by adult speakers of English. For speakers of English, the correct choice (excluding exceptional cases) of plural allomorph is determined by the final phoneme of the singular form of the noun. The allomorph /iz/ is added after sibilants and affricates; all other endings, if voiceless take /s/, and if voiced take /z/. These rules are exhibited daily in the child's linguistic environment, and our goal was to investigate to what extent the child has abstracted these implicit regularities. For this purpose we employed three production and three recognition tasks.

Method

Subjects.

The Ss were 36 kindergarten pupils with a mean age of five years 11 months. Half of the Ss were tested on the Production tasks and half on the Recognition tasks.

Production 1. Thirty-six pairs of pictures depicting cartoon animals were prepared. One member of each pair showed a single animal and the other a plural number of the same animal. For six pairs, S was first

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shown the singular picture, given its name (a nonsense syllable), and then requested to provide the proper name for the plural picture. For six other pairs, the procedure was reversed.

In this and in the following tasks the three allomorphs were equally represented.

Production 2. This task was the same as the preceding one, except that Ss were asked to imagine animals without being given any pictorial stimuli.

Production 3. In this task, the second picture of the pair depicted the animal or animals preforming some action, and S was asked to describe the picture. E recorded only whether the appropriate form of the noun was used.

Recognition 1. In this task, S was shown one picture while E said a pair of nonsense names. S was instructed to choose the best name for the picture. Half of the pictures depicted one animal and the other half two or more.

Recognition 2. Two pictures, one depicting a single animal and the other several different animals, were shown to S while E said one name. S had to point to the picture named by E.

Recognition 3. A pair of pictures was shown to S while E said a pair of names. S had to point first to one picture as E again said the name, and then to tne other named picture.

Results

Analysis of variance for the three Production tasks revealed a significant difference among allomorphs ($F = 9.23$, p .01) and among tasks ($F = 3.28$, $p < .05$). The interaction was not significant ($F = 1.33$). The

overall mean number of errors for Production tasks 1, 2, and 3 respectively is 2.56, 3.44, and 2.39. In each task, significantly more errors occurred with /ɨz/ than with either of the other two allomorphs. There were no significant differences between words with /s/ and /z/ in any of these tasks. Significantly more errors were found when the child had to produce the plural form given the singular, then when the task was reversed (t = 2.50, $p < .05$).

Analysis of variance for the three Recognition tasks revealed a significant difference between tasks (F = 26.24, $p < .001$) as well as a significant interaction (F - 3.80, $p < .05$); but the difference between allomorphs was not significant (F = 1.83). The overall mean number of errors for Recognition tasks 1, 2, and 3 respectively is 1.78, 2.78, and .18. No comparisons were possible within Recognition 3 because of the virtual absence of errors. In the other two Recognition tasks, significantly fewer errors occurred with /z/ than with either /s/ or with /ɨz/. There were no differences between errors with /s/ and with /ɨz/. No significant difference was found between number of singular and number of plural errors.

Discussion

The greater difficulty of the /ɨz/ marker in Production tasks can be attributed to its infrequency in the child's language and to the plural-sounding endings of singular nouns taking this allomorph.

The relative ease of /z/ in the Recognition tasks can be explained by reference to two facts about English: (a) Virtually all nouns ending in /consonant + z/ are plurals, but many singular words end in /consonant + s/ and in /vowel + z/, and (b) /z/ marks plurality for more words than /s/ or

/±z/. Thus, when a speaker of English hears a word ending in /consonant + z/ and has to decide whether it is a singular noun or a plural noun, his decision is much easier than in the case of /consonant + s/ or /vowel + z/. In the latter case, there are additional complications.

Implications for Reading

The following points are not direct deductions from our results. Rather, their relation to the findings is mediated through a general conception of mental operations supported by the present findings and consistent with other psychological evidence.

(a) It does not seem very fruitful to distinguish between receptive and productive control of grammatical rules in terms of levels of difficulty. Recognition task 2 is as difficult as any of the Production tasks, (The differences are not significant.) yet, it manifests a pattern of errors characteristic of the other Recognition Tasks rather than the pattern of the Production tasks.

Reading and writing, although certainly sharing some common processes, are not "the same thing in reverse."

(b) In performing a particular task, the speaker is not restricted to the information bearing directly on the task, but has access to and can utilize othere aspects of his linguistic knowledge. In carrying out a task involving singular and plural nouns, the children in our study apparently utilized statistical information which would not be included in any formal statement of pluralization rules.

The omnipresence of the totality of language is perhaps nowhere as obvious as in reading where pragmatic, semantic, synbactic, phonological,

and graphemic factors, in addition to sound-spelling correspondences, play important roles in the process of giving an oral interpretation to visual material.

(c) The problem of the undependability of English writing disappears if we conceive of reading not as a process by which the reader has to extract full information from the written material for correct oral rendition, but rather as a process involving the utilization of information to decide between alternatives. On this notion, reading is considered a hierarchical process of elimination of uncertainty. A comprehension of the structure of an utterance and knowledge of its topic of discourse impose broad limits on the perception of individual elements (say words) and eliminate a large number of alternatives. Within these broad limits, the number of possible renditions of a particular word would still be large. In order to reduce the alternatives to one, the reader will have to rely on the graphemic information present in the word. Here the reader will be best advised to examine first the letters richest in information, i.e., those capable of eliminating the largest number of alternative hypotheses, and to use the low information letters for deciding among the remaining alternatives. Using the criterion of amount of information, a natural dichotomy can be drawn between consonants and vowels. Consonants appear to be richer in information than vowels as evidenced by the greater impairment of comprehension resulting from consonant elimination than from vowel elimination. Moreover, consonants have more regular sound values than vowels and are therefore more dependable cues to reading.

If vowel letters were left to decide only those questions not answerable by the consonants, their "irregularity" would not constitute a

problem. Often the information the vowel letter will need to yield in the decision process is only negative, i.e., what sound value it does not have rather than what sound value it does have. Stated somewhat differently, assume vowel letter "a" has three sound values designated X1, X2, X3 and "o" has three other values designated Y1, Y2, and Y3. It will often happen in reading that the reader will need to decide only whether the letter has a sound value belonging to the X family or the Y family; the particular value of X or Y can be decided on the basis of other information.